

What is claimed is:

1. In a wireless telephone for conducting wireless telephonic communications, the improvement comprising:

a video system integral with said telephone for receiving and transmitting video images, and for viewing said video images, said video system comprising;

5 a camera module housing an image sensor therein, said image sensor including an array of pixels for receiving images thereon, said image sensor further including circuitry means on said first plane and coupled to said array of pixels for timing and control of said array of pixels, said image sensor producing a pre-video signal, a first circuit board mounted in said camera module adjacent said image sensor and electrically
10 coupled to said image sensor, said first circuit board including circuitry means for converting said pre-video signal to a desired video format, said camera module further including a transceiver radio element mounted therein and electrically communicating with said first circuit board to transmit said converted pre-video signal;

15 a transceiver radio module mounted in the wireless telephone for wirelessly communicating with said transceiver element in said camera module to receive said converted pre-video signal;

a video monitor attached to said wireless phone for viewing said video images, said video monitor electrically coupled to said transceiver radio module for displaying video images processed by said first circuit board.

2. A device, as claimed in claim 1, wherein:
said pixels are CMOS pixels.

3. A device, as claimed in claim 1, wherein:
said transceiver radio element and said transceiver radio module communicate by a Bluetooth communications standard.

4. A device, as claimed in claim 1, wherein:

said transceiver radio element and said transceiver radio module communicate by an IEEE 802.15.3 communications standard.

5. In a wireless telephone for conducting wireless telephonic communications, the improvement comprising:

a video system integral with said telephone for receiving and transmitting video images, and for viewing said video images, said video system comprising;

5 a camera module housing an image sensor therein, said image sensor including an array of pixels for receiving images thereon, said image sensor further including circuitry means on said first plane and coupled to said array of pixels for timing and control of said array of pixels, said image sensor producing a pre-video signal;

10 said camera module further including a transceiver radio element mounted therein and electrically communicating with said image sensor to transmit said pre-video signal;

a transceiver radio module mounted in the wireless telephone for wirelessly communicating with said radio transceiver element in said camera module to receive said pre-video signal;

15 a first circuit board mounted in said wireless telephone and electrically coupled to said transceiver radio module, said first circuit board including circuitry means for converting said pre-video signal to a desired video format;

20 a video monitor attached to said wireless phone for viewing said video images, said video monitor electrically coupled to said transceiver radio module for displaying video images processed by said first circuit board.

6. A device, as claimed in Claim 5, wherein:

said pixels are CMOS pixels.

7. A device, as claimed in claim 5, wherein:
said transceiver radio element and said transceiver radio module communicate by
a Bluetooth standard.

8. A device, as claimed in claim 5, wherein:
said transceiver radio element and said transceiver radio module communicate by
an IEEE 802.15.3 standard.

9. In a video telephone for receiving and transmitting telephone
communications to include video signals transmitted by the user of the phone, and video
signals received from the party to whom a call was made, the video telephone including
a housing, and a video monitor for viewing the video signals, the improvement
comprising:

a camera module for taking video images, said camera module wirelessly
communicating with circuitry within said video telephone enabling video signals to be
transmitted from said camera module to said video telephone for viewing by said user or
for further transmission to another party, said camera module including an image sensor
housed therein, said image sensor lying in a first plane and including an array of pixels
for receiving images thereon, said image sensor further including circuitry means on said
first plane and coupled to said array of said pixels for timing and control of said array of
pixels, said image sensor producing a pre-video signal, a first circuit board electrically
connected to said image sensor and mounted within said camera module adjacent said
image sensor, said first circuit board including circuitry means for converting said pre-
video signal to a desired video format, and a transceiver radio element mounted in said
camera module and electrically coupled to said first circuit board for transmitting said
converted pre-video signal wirelessly to the video telephone.

10. A device, as claimed in claim 9, wherein:

said pixels are CMOS pixels.

11. A device, as claimed in claim 9, wherein:

said transceiver radio element communicates with the video telephone by a Bluetooth communications standard.

12. A device, as claimed in claim 9, wherein:

said transceiver radio element communicates with the video telephone by an IEEE 802.15.3 communications standard.

13. In a video telephone for receiving and transmitting telephone communications to include video signals transmitted by the user of the phone, and video signals received from the party to whom a call was made, the video telephone including a housing, and a video monitor for viewing the video signals, the improvement comprising:

a camera module for taking video images, said camera module wirelessly communicating with circuitry within said video telephone enabling video signals to be transmitted from said camera module to said video telephone for viewing by said user or for further transmission to another party, said camera module including an image sensor housed therein, said image sensor lying in a first plane and including an array of pixels for receiving images thereon, said image sensor further including circuitry means on said first plane and coupled to said array of said pixels for timing and control of said array of pixels, said image sensor producing a pre-video signal, and a transceiver radio element mounted in said camera module and electrically coupled to said image sensor board for transmitting the pre-video signal wirelessly to the video telephone, wherein the pre-video signal is further processed in the video telephone for viewing.

14. A device, as claimed in claim 13, wherein:

said pixels are CMOS pixels.

15. A device, as claimed in claim 13, wherein:

said transceiver radio element communicates with the video telephone by a Bluetooth communications standard.

16. A device, as claimed in claim 13, wherein:

said transceiver radio element communicates with the video telephone by an IEEE 802.15.3 communications standard.

17. A video telephone for conducting telephonic communications including receiving and transmitting video images between two parties of a telephone call, said video telephone comprising:

5 an image sensor lying in a first plane including an array of pixels for receiving images thereon, said image sensor further including circuitry means on said first plane and coupled to said array of pixels for timing and control of said array of pixels, said image sensor producing a pre-video signal;

10 a first circuit board electrically communicating with said image sensor, said first circuit board including circuitry means for converting said pre-video signal to a desired video format;

a camera module housing said image sensor and said first circuit board;

15 a transceiver radio element mounted in said camera module and communicating with said first circuit board for wirelessly transmitting the converted pre-video signal; a transceiver radio module communicating wirelessly with said transceiver radio element for receiving the converted pre-video signal;

a transceiver/amplifier section electrically coupled to said transceiver radio module for amplifying and further transmitting the converted pre-video signal, and for

receiving and amplifying video and audio signals transmitted by the other party of the telephone call;

20 a digital signal processor electrically coupled to said transceiver radio module and said transceiver/amplifier section, said digital signal processor further conditioning said converted pre-video signal prior to said converted pre-video signal being manipulated by said transceiver/amplifier section, and also for conditioning video and audio signals received by said transceiver/amplifier section from the other party of the telephone call;

25 a microphone electrically communicating with said digital signal processor for receiving sound and converting the sound to audio signals;

a speaker electrically communicating with said digital signal processor for broadcasting audio signals;

30 a video monitor attached to said video phone, said video monitor for selectively displaying the converted pre-video signals, and for selectively displaying video images received by said transceiver/amplifier section from the other party of the telephone call; a video switch communicating with said transceiver radio module and said digital signal processor for switching video images to be viewed on said video monitor, a user being able to selectively display video images from the converted pre-video signal or video images received by the transceiver/amplifier section from the other party of the telephone call; and

a power supply mounted to said video telephone for providing power thereto.

18. A device, as claimed in claim 17, wherein:
said pixels are CMOS pixels.

19. A device, as claimed in claim 17, wherein:
said transceiver radio element communicates with the video telephone by a Bluetooth communications standard.

20. A device, as claimed in claim 17, wherein:
said transceiver radio element communicates with the video telephone by an
IEEE 802.15.3 communications standard.

21. A video telephone for conducting telephonic communications including
receiving and transmitting video images between two parties of a telephone call, said
video telephone comprising:

an image sensor lying in a first plane, and an array of pixels for receiving images
thereon, said image sensor further including circuitry means on said first plane and
coupled to said array of pixels for timing and control of said array of pixels, said image
sensor producing a pre-video signal;

a camera module housing said image sensor therein;

a transceiver radio element mounted in said camera module and communicating with
said image sensor for wirelessly transmitting the pre-video signal;

a transceiver radio module communicating wirelessly with said transceiver radio
element for receiving the pre-video signal;

a first circuit board electrically communicating with said transceiver radio
module, said first circuit board including circuitry means for converting said pre-video
signal to a desired video format;

a transceiver/amplifier section electrically coupled to said first circuit board for
amplifying and further transmitting the converted pre-video signal, and for receiving and
amplifying video and audio signals transmitted by the other party of the telephone call;

a digital signal processor electrically coupled to said first circuit board and said
transceiver/amplifier section, said digital signal processor further conditioning said
converted pre-video signal prior to said converted pre-video signal being manipulated by
said transceiver/amplifier section, and also for conditioning the video and audio signals
received by said transceiver/amplifier section from the other party of the telephone call;

a microphone electrically communicating with said digital signal processor for receiving sound and converting the sound to audio signals;

a speaker electrically communicating with said digital signal processor for broadcasting audio signals;

a video monitor attached to said video phone, said video monitor for selectively displaying the converted pre-video signals, and for selectively displaying video images received by said transceiver/amplifier section from the other party of the telephone call;

a video switch communicating with said transceiver radio module and said digital signal processor for switching video images to be viewed on said video monitor, a user being able to selectively display video images from the converted pre-video signal or video images received by the transceiver/amplifier section from the other party of the telephone call; and

a power supply mounted to said video telephone for providing power thereto.

22. A device, as claimed in claim 21, wherein:
said pixels are CMOS pixels.

23. A device, as claimed in claim 21, wherein:
said transceiver radio element communicates with the video telephone by a Bluetooth communications standard.

24. A device, as claimed in claim 21, wherein:
said transceiver radio element communicates with the video telephone by an IEEE 802.15.3 communications standard.

25. In a wireless telephone for conducting wireless telephonic communications, the improvement comprising:

a video system integral with said telephone for receiving and transmitting video images, and for viewing said images, said video system comprising:

5 a camera module housing an image sensor therein, said image sensor lying in a first plane and including an array of pixels for receiving images thereon, circuitry means electrically coupled to said array of pixels for timing and control of said array of pixels, said circuitry means for timing and control being placed remote from said array of pixels on a second plane, said image sensor producing a pre-video signal, a first
10 circuit board lying in a third plane and electrically coupled to said image sensor, said first circuit board including circuitry means for processing and converting said pre-video signal to a desired video format, a transceiver radio element communicating with said first circuit board for transmitting said converted pre-video signal;

15 a transceiver radio module mounted in said telephone for wirelessly receiving said converted pre-video signal; and

 a video monitor attached to said wireless phone for viewing said video images, said video monitor communicating with said transceiver radio module, and displaying video images processed by said first circuit board.

26. A device, as claimed in claim 25, wherein:

said pixels are CMOS pixels.

27. A device, as claimed in claim 25, wherein:

said transceiver radio element communicates with the video telephone by a Bluetooth communications standard.

28. A device, as claimed in claim 25, wherein:

said transceiver radio element communicates with the video telephone by an IEEE 802.15.3 communications standard.

29. In a video telephone for receiving and transmitting telephone communications to include video signals transmitted by the user of the phone, and video signals received from the party to whom a call is made, the video telephone including a video monitor for viewing the video signals, the improvement comprising:

5 a camera module for taking video images, said camera module communicating with circuitry within said video telephone enabling video signals to be transmitted from said camera module to said video telephone for viewing by said user or for further transmission to another party, said camera module including an image sensor housed therein, said image sensor lying in a first plane and including an array of pixels for
10 receiving images thereon, said image sensor producing a pre-video signal, a first circuit board mounted adjacent said image sensor and electrically connected to said image sensor, said first circuit board including circuitry means for timing and control of said array of pixels and circuitry means for processing and converting said pre-video signal to a desired video format, and a transceiver radio element communicating with said first
15 circuit board for wirelessly transmitting said converted pre-video signal.

30. A device, as claimed in claim 29, wherein:
said pixels are CMOS pixels.

31. A device, as claimed in claim 29, wherein:
said transceiver radio element transmits by a Bluetooth communications
standard.

32. A device, as claimed in claim 29, wherein:
said transceiver radio element transmits by an IEEE 802.15.3 communications
standard.

33. In a video telephone for receiving and transmitting telephone communications to include video signals transmitted by the user of the phone, and video signals received from the party to whom a call is made, the video telephone including a video monitor for viewing the video signals, the improvement comprising:

5 a camera module for taking video images, said camera module communicating with circuitry within said video enabling video signals to be transmitted from said camera module to said video telephone for viewing by said user or for further transmission to another party, said camera module including an image sensor housed therein and lying in a first plane, said image sensor including an array of pixels for
10 receiving images thereon, said image sensor producing a pre-video signal, and a transceiver radio element communicating with said image sensor for wirelessly transmitting said pre-video signal.

34. A device, as claimed in claim 33, wherein:
said pixels are CMOS pixels.

35. A device, as claimed in claim 33, wherein:
said transceiver radio element transmits by a Bluetooth communications standard.

36. A device, as claimed in claim 33, wherein:
said transceiver radio element transmits by an IEEE 802.15.3 communications standard.

37. In a video telephone for receiving and transmitting telephone communications to include video signals transmitted by the user of the phone, and video signals received from the party to whom a call was made, the video telephone including a video monitor for viewing the video signals, the improvement comprising:

5 a camera module for taking video images, said camera module communicating
with circuitry within said video enabling video signals to be transmitted from said
camera module to said video telephone for viewing by said user or for further
transmission to another party, said camera module including an image sensor housed
therein, said image sensor lying in a first plane and including an array of pixels for
10 receiving images thereon, said image sensor further including circuitry means electrically
coupled to said array of said pixels for timing and control of said array of pixels, said
circuitry means for timing and control placed remote from said array of pixels on a
second plane, said image sensor producing a pre-video signal, a first circuit board
electrically connected to said image sensor and lying in a third plane, said first circuit
15 board including circuitry means for processing and converting said pre-video signal to a
desired video format, and a radio transceiver element communicating with said first
circuit board for wirelessly transmitting said converted pre-video signal.

38. A device, as claimed in claim 37, wherein:
said pixels are CMOS pixels.

39. A device, as claimed in claim 37, wherein:
said transceiver radio element transmits by a Bluetooth communications
standard.

40. A device, as claimed in claim 37, wherein:
said transceiver radio element transmits by an IEEE 802.15.3 communications
standard.

41. In a video telephone for receiving and transmitting telephone
communications to include video signals transmitted by the user of the phone, and video

signals received from the party to whom a call was made, the video telephone including a video monitor for viewing the video signals, the improvement comprising:

- 5 a camera module for taking video images, said camera module communicating with circuitry within said video telephone enabling viewing of said video images on said video telephone and enabling video signals to be transmitted from said camera module for viewing by said party, said camera module including an image sensor housed therein, said image sensor lying in a first plane and including an array of pixels for receiving
- 10 images thereon, said image sensor further including circuitry means electrically coupled to said array of said pixels for timing and control of said array of pixels, said circuitry means for timing and control placed remote from said array of pixels on a second plane, said image sensor producing a pre-video signal, and a radio transceiver element communicating with said image sensor for wirelessly transmitting said pre-video signal.

42. A device, as claimed in claim 41, wherein:
said pixels are CMOS pixels.

43. A device, as claimed in claim 41, wherein:
said transceiver radio element transmits by a Bluetooth communications
standard.

44. A device, as claimed in claim 41, wherein:
said transceiver radio element transmits by an IEEE 802.15.3 communications
standard.

45. A video telephone for conducting telephonic communications including receiving and transmitting video images between two parties of a telephone call, said video telephone comprising:

5 an image sensor lying in a first plane including an array of pixels for receiving images thereon, said image sensor producing a pre-video signal;

a first circuit board electrically communicating with said image sensor, said first circuit board including circuitry means for timing and control of said array of pixels and circuitry means for processing and converting said pre-video signal to a desired video format;

10 a transceiver radio element communicating with said first circuit board for wirelessly transmitting said converted pre-video signal;

a camera module housing said image sensor, said first circuit board, and said transceiver radio element therein;

15 a transceiver radio module mounted in said telephone for receiving said converted pre-video signal;

a transceiver/amplifier section electrically coupled to said transceiver radio module for amplifying and further transmitting the converted pre-video signal, and for receiving and amplifying video and audio signals transmitted by the other party of the telephone call;

20 a digital signal processor electrically coupled to said transceiver radio module and said transceiver/amplifier section, said digital signal processor further conditioning said pre-video signal which is first conditioned by said first circuit board, and also for conditioning video and audio signals received by said transceiver/amplifier section from the other party of the telephone call;

25 a microphone electrically communicating with said digital signal processor for receiving sound and converting the sound to audio signals;

a speaker electrically communicating with said digital signal processor for broadcasting audio signals;

30 a video monitor attached to said video phone, said video monitor for selectively displaying images from said imaging device, and for selectively displaying video images received by said transceiver/amplifier section;

a video switch communicating with said first circuit board and said digital signal processor for switching video images to be viewed on said video monitor; and
a power supply mounted to said video telephone for providing power thereto.

46. A device, as claimed in claim 45, wherein:
said pixels are CMOS pixels.

47. A device, as claimed in claim 45, wherein:
said transceiver radio element transmits by a Bluetooth communications standard.

48. A device, as claimed in claim 45, wherein:
said transceiver radio element transmits by an IEEE 802.15.3 communications standard.

49. A video telephone for conducting telephonic communications including receiving and transmitting video images between two parties of a telephone call, said video telephone comprising:

an image sensor lying in a first plane including an array of pixels for receiving images thereon, said image sensor producing a pre-video signal;

a first circuit board electrically communicating with said image sensor, said first circuit board including circuitry means for timing and control of said array of pixels; a transceiver radio element communicating with said first circuit board for wirelessly transmitting said pre-video signal;

a camera module housing said image sensor, said first circuit board, and said transceiver radio element therein;

a transceiver radio module mounted in said telephone for receiving said pre-video signal;

20 receiving and amplifying video and audio signals transmitted by the other party of the telephone call;

a digital signal processor electrically coupled to said transceiver radio module and said transceiver/amplifier section, said digital signal processor further conditioning said converted pre-video signal which is first conditioned by said first circuit board, and
25 also for conditioning video and audio signals received by said transceiver/amplifier section from the other party of the telephone call;

a microphone electrically communicating with said digital signal processor for receiving sound and converting the sound to audio signals;

a speaker electrically communicating with said digital signal processor for
30 broadcasting audio signals;

a video monitor attached to said video phone, said video monitor for selectively displaying images from said imaging device, and for selectively displaying video images received by said transceiver/amplifier section from the other party of the telephone call;

a video switch communicating with said transceiver radio module and said digital
35 signal processor for switching video images to be viewed on said video monitor, a user being able to selectively display video images from the imaging device or video images received by the transceiver/amplifier section from the other party of the telephone call; and

a power supply mounted to said video telephone for providing power thereto.

54. A device, as claimed in claim 53, wherein:
said pixels are CMOS pixels.

55. A device, as claimed in claim 53, wherein:
said transceiver radio element transmits by a Bluetooth communications
standard.

56. A device, as claimed in claim 53, wherein:
said transceiver radio element transmits by an IEEE 802.15.3 communications
standard.

57. In a method for conducting video telephone communications with a video
telephone, the improvement comprising the steps of:

providing a camera module having an image sensor housed therein;
removing the camera module from connection with the video telephone;
5 pointing the camera module at a targeted object and selectively taking video
images of the targeted object;
wirelessly transmitting the video images taken by the image sensor to the video
telephone;
processing the video images transmitted by the camera module; and
10 selectively viewing the video images on the video telephone and selectively
transmitting the video images to another party.

58. A method, as claimed in claim 57, wherein:
said image sensor includes a CMOS pixel array.

59. In a wireless telephone for conducting wireless telephonic
15 communications, the improvement comprising:

a camera module housing an image sensor therein, said camera module for
producing video images of a targeted object;
means for wirelessly interconnecting said camera module to said wireless
telephone, said means for wirelessly interconnecting enabling said camera module to be
20 selectively displaced at a location remote from said wireless telephone; and

a video monitor attached to said wireless phone for selectively viewing video images taken by said camera module, and for selectively viewing incoming video images transmitted by another party.

60. A device, as claimed in claim 59, wherein:

said video telephone includes a housing, and an opening in said housing for receiving said camera module so as to place said camera module in a stored position.

61. In a video telephone for receiving and transmitting audio and visual communications to include video signals transmitted by the user of the video telephone, and video signals received from the party to whom a call was made, the video telephone including a housing, and a video monitor for selective viewing of the transmitted and incoming video signals, the improvement comprising:

a camera module housing an image sensor therein, said camera module for producing video images of a targeted object; and

means for wirelessly interconnecting said camera module to said wireless telephone, said means for wirelessly interconnecting enabling said camera module to be selectively displaced at a location remote from said wireless telephone.

62. A device, as claimed in claim 61, wherein:

said video telephone includes a housing, and an opening in said housing for receiving said camera module so as to place said camera module in a stored position.

63. In a video telephone for conducting communications including receiving and transmitting video images between two parties of a video telephone call, the improvement comprising:

a camera module housing an image sensor therein;

5 a first circuitry means coupled to said image sensor for timing and control of said image sensor;

a second circuitry means communicating with said first circuitry means for processing images taken by said image sensor to create video signals of a desired video format;

10 means for wirelessly interconnecting said camera module to said video telephone, said means for wirelessly interconnecting enabling said camera module to be selectively displaced from said video telephone by the user enabling the camera module to be pointed at a targeted object without having to manipulating the video telephone.

64. A device, as claimed in claim 63, wherein:

said video telephone includes a housing, and an opening formed in said housing for receiving said camera module so as to place said camera module in a stored position.

65. In a video telephone for conducting communications including receiving and transmitting video images between two parties of a video telephone call, the improvement comprising:

a camera module housing an image sensor therein;

5 a camera module battery housed within said camera module for providing power to said camera module;

a camera battery charge circuit housed within the video telephone;

a telephone battery housed within the telephone for providing power to said camera battery charge circuit; and

10 wherein the camera module is received in the video telephone so said camera module battery electrically communicates with said camera battery charge circuit to selectively charge said camera module battery.

66. A method of powering and recharging a camera module for use with a video telephone, said method comprising the steps of:

providing a video telephone housing a camera battery charge circuit therein;
providing a camera module housing an image sensor therein for taking video images,
5 and a camera module battery housed within said camera module for selectively powering said camera module;

removing said camera module from seated engagement with the video telephone resulting in activation of said camera module battery for powering said camera module;
and

10 returning said camera module to its seated position with said video telephone and in electrical communication with the battery charge circuit to charge said camera module battery.